Volume 18: 151–154
Publication date: 13 July 2015
dx.doi.org/10.7751/telopea8757

TELOPEA
Journal of Plant Systematics

The Royal Botanic Gardens & Domain Trust

plantnet.rbgsyd.nsw.gov.au/Telopea • escholarship.usyd.edu.au/journals/index.php/TEL • ISSN 0312-9764 (Print) • ISSN 2200-4025 (Online)

Ariopsis peltata var. *brevifolia* (Araceae) from Achankovil Shear Zone region of Southern Western Ghats, India

Jose Mathew[1] and Kadasseril V. George[2]

[1]*School of Environmental Sciences, Mahatma Gandhi University, Kottayam, Kerala, India.*
polachirayan@yahoo.co.in
[2]*NKP Vaidyar Research Foundation, Cochin, Kerala, India.* kvgeorge58@yahoo.in

Abstract

In the floristic expedition in Achankovil Shear Zone part of Southern Western Ghats, a variant of *Ariopsis peltata* was collected which differs from the typical species mainly by the miniature leaf size, domed male zone, and by two rings of punctured cavities in synandria. This specimen is described and illustrated here as *Ariopsis peltata* var. *brevifolia*.

Introduction

Achankovil Shear Zone (AKSZ) is the continuum of Mozambic belt (Pan African orogeny) of the Gondwana mass (Dissanayake and Chandrajith 1999). It extends in an area of 8 to 22 km width, which passes through the Achankovil forests of Southern Western Ghats. AKSZ is the repository of many morpho-ecotypes and endemics (Mathew and George 2013). Reasons for occurrence of morphological variants in Achankovil area have been reported due to multiple physical, climatological and geological changes that might have occurred during the evolution of the flora (Mathew 2015). During the botanical explorations in the Achankovil forests (Fig. 1) during 2009–2014 has yielded some interesting specimens of genus *Ariopsis*.

Ariopsis peltata Nimmo is an Asiatic floral element with a distribution area extending from Southern Western Ghats to Western Malesia (Sasidharan 2013). Analysis of morphological variation in *Ariopsis peltata* across the AKSZ revealed an unusual variant in the Kottavasal Hills of Achankovil is readily distinguishable. This variant taxon differs from the Typical *Ariopsis peltata* in having miniature leaf and petiole (1-1.5 cm), a dome shaped male zone, a synandrium with two rings of cavities (vs up to six cavities, and pistils three stigma lobes. On critical inspection, we feel that our plant is sufficiently distinctive to warrant taxonomic recognition. Here we propose it as a new variety which is described and illustrated here as *Ariopsis peltata* var. *brevifolia*.

Taxonomy

Ariopsis peltata var. *brevifolia* J.Mathew & K.V.George, *var. nov.* (Fig. 2)

Type: INDIA: Kerala: Kollam District, Kottavasal, ± 1250 m, 26 Jun 2013, *Jose Mathew 3074* (flowering) (holo: MH; iso: TBGT, SESH).

Lithophytic herbs growing in cracks of crystalline charnockite; slender to 2 cm tall; tuber subglobose, ca 0.5 cm diam., covered with fibrous cataphyllary remains. Petiole very slender, 1–1.5 cm in length; lamina peltate, cordate-ovate, 1–1.5 cm long, 1–1.5 cm wide, membranaceous, pale green above, glaucous below; primary lateral veins pinnate radiating from petiole insertion, forming submarginal collective vein; higher order venation reticulate. Inflorescence 1 or 2 in each floral sympodium. Peduncle very slender, 1–2 cm long, much longer than spathe, erect to spreading. Spathe ovate, boat-shaped, 0.7–1 cm long, 0.8 cm wide, dull yellow to pink. Spadix shorter than spathe, c. 0.5 cm long, 0.2 cm wide; flowers unisexual – female zone 4–6-flowered, secund, and dorsally adnate to spathe, c. 4 mm long; pistils ovoid-oblong, c. 3 mm long, 2 mm wide, pale green speckled purple, stylar region very short, stigma stellate with 3 lobes, lobes initially erect, later spreading and reflexed, white; male flower zone fertile to apex, hemispherical-dome, c. 4 mm long, 4 mm wide, dirty pink speckled; synandria peltate, connate filaments forming a stipe longer and narrower than dilated common connective, synandria all connate apically, forming continuous surface punctured by 2 rings of cavities with somewhat prominent margin into which pollen is shed from the 3(or 4) surrounding thecae of which each pair of thecae belongs to a different synandrium. Fruit a 3-angled berry, c. 4 mm long, 4 mm wide, pale green, stigma persistent, many-seeded, seed oblong.

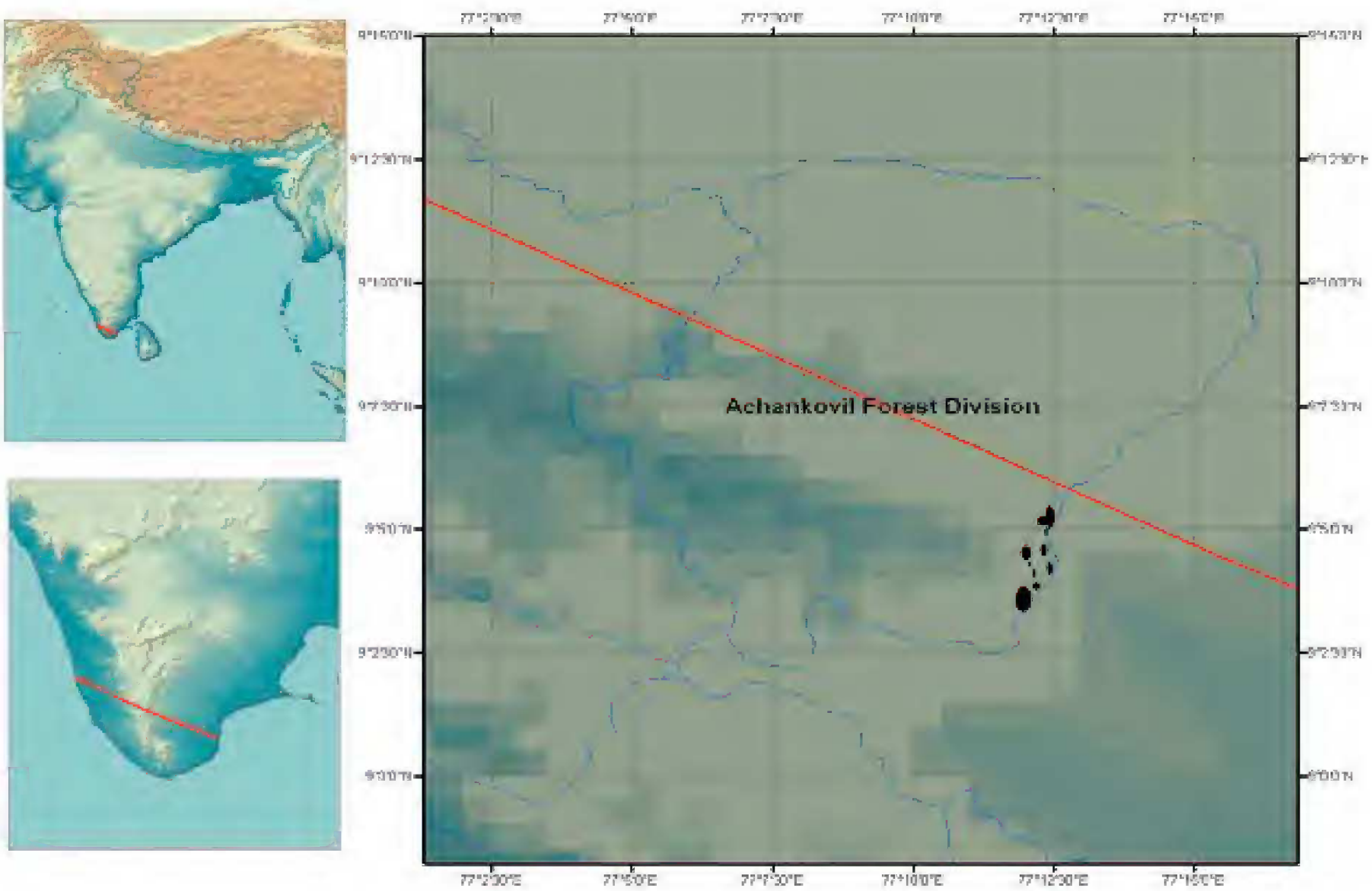

Fig. 1. Distribution map of *Ariopsis peltata* var. *brevifolia* in southern Western Gnats, India. Red line indicates the centre of Achankovil Shear Zone; black areas indicate known distribution of *A. peltata* var. *brevifolia*.

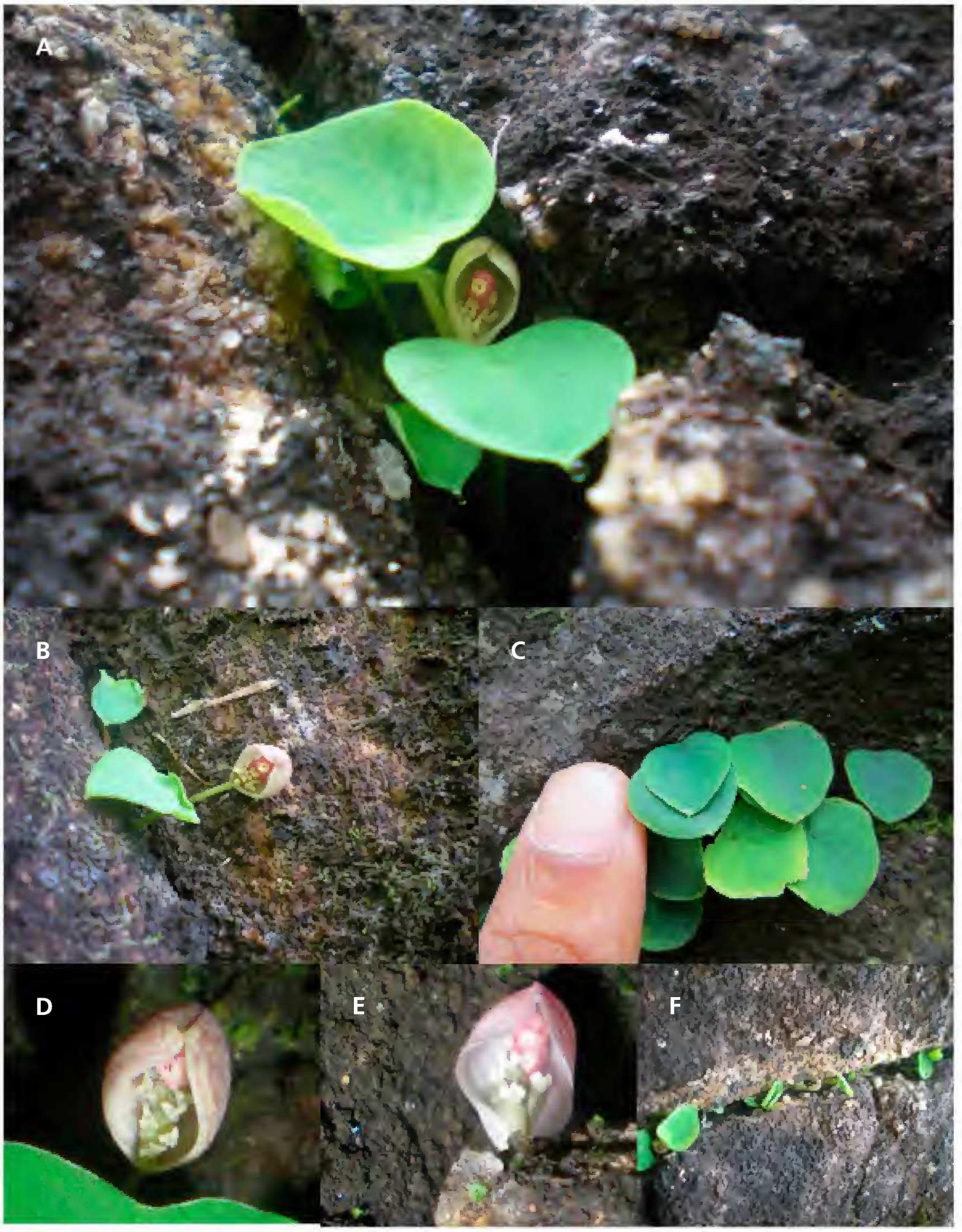

Fig. 2. *Ariopsis peltata* var. *brevifolia* **a, b,** whole plant in flower; **c,** mature plant showing its size; **d,** female zone showing 3 stigmatic lobes in each flower; **e,** fruit (3 facets); **f,** habitat.

Phenology: Flowering and fruiting recorded from May to July.

Other specimen examined: INDIA: Kerala: Thuvalmala, Achankovil, *J. Mathew 2997, 3042–3046,* 29 Jul 2011 (KFRI); Sabarimala, Pathinamthitta, *J. Agustine & K.P. Rajesh 14926*, 10 Oct 1996 (KFRI).

Distribution: Found in crevices of rocky cliffs (alt. ± 1250 m) of the Kottavasal Hills (9°4'16"N, 77°11'08"E), Agasthyamalai Biosphere Reserve, Western Ghats, Kerala, India in association with *Didymocarpus tomentosa* Wight and *Drosera peltata* Thunb.

Etymology: The epithet ('*brevifolia*') is based on the small leaves of this recently described variety of *Ariopsis peltata.*

Conservation status: The conservation status of this variety is data deficient. However the distribution is limited with only a few plants observed at the few known locations (each with c. 30–100 plants). Further survey for this variety is suggested, which would need to be conducted in May or June when Monsoon starts and plants are flowering in order to differentiate it from the typical *A. peltata.*

Notes: *Ariopsis peltata* var. *brevifolia* is morphologically similar to *A. peltata* var. *peltata* in both vegetative and floral morphology, but differs mainly in having smaller leaves, plant and inflorescence, hemispherical domed male zone with reduced synandria and opening pore numbers. There are 3 stigmatic lobes instead of 6 suggesting the *3*-carpellate nature of the gynoecium.

Table 1. Prominent morphological differences distinguishing *Ariopsis peltata* var. *brevifolia* from *A. peltata* var. *peltata*

Character	A. peltata var. brevifolia	A. peltata var. peltata
Plant size	mature plant size 1–2 cm	mature plant size 5–30 cm
Leaf size	1–1.5cm long, 1-1.5 cm wide	5–15 cm long, 5–9 cm wide
Stigmatic lobes	3	6, cultivated variety rarely shows 3 lobes
Male zone	hemispherical domed, punctured cavities 3 in 2 rings	conical, cavities more than 6 in 6–9 randomly arranged whorls

Acknowledgements

The first author is thankful to the Dr C.T. Aravindkumar, Director, School of Environmental Sciences, M. G. University, Kottayam, Kerala for suggestions and encouragement. First author is greatly benefited from the reviewers and Dr Barry J Conn (NSW). The authors are thankful to the herbarium curator at TBGT, Thiruvanthapuram, Kerala for consultations, and the Kerala Forest Department for permission to conduct research.

References

Dissanayke CB, Chandrajith R (1999) Sri Lanka- Madagascar Gondwana linkage: Evidence for a Pan African mineral belt. *The Journal of Geology* 107: 223–235

Mathew J, George KV (2013). Morpho-ecotypes of endemic flowering plants from Achankovil Shear Zone in Agasthyamalai Biosphere Reserve, Western Ghats, Kerala. *Annals of Plant Sciences* 02 (12): 514–519

Mathew J (2015). Floristic and Ethnobotanical studies of Achankovil forests, Western Ghats, Kerala. *School of Environmental Sciences, Mahatma Gandhi University, Kerala, Ph.D. Thesis.* Pp 800+XIV.

Sasidharan N (2013) Flowering plants of Kerala: CD-ROM ver. 2.0. (Kerala Forest Research Institute, Peechi, Kerala)

Manuscript received 26 May 2015, accepted 18 June 2015